The Effect of Employment on the Mental Health of Lone Mothers in the UK before and after New Labour's Welfare Reforms

ABSTRACT

Since 1999 a series of reforms have been introduced to the UK welfare system with the aim of increasing rates of lone parent employment. Increased employment was expected not only to reduce rates of lone parent poverty but to provide wider benefits, including improvements in lone parents' mental health. Yet for lone mothers there is very little evidence on how work influences mental health. Using data from the British Household Panel Survey (BHPS) between 1991 and 2008 this paper assesses how lone mothers' mental health, measured in the BHPS using the General Health Questionnaire (GHQ), is influenced by employment and how this relationship changed over the period of welfare reform. A range of panel data models are estimated and the results and results for lone mothers are compared to those for mothers with partners.

In the period after welfare reform being in work was associated with significant improvements in lone mothers' mental health. This was in sharp contrast to the situation prior to reform when there was very little association with employment, both those in and out of work had a very high risk of poor mental health. For partnered mothers, employment is also associated with improved mental health, although the effect is much smaller than that for lone mothers in the period after welfare reform and shows no significant change over time. That there was no change in the relationship between work and mental health for those with partners suggests that reforms to the welfare system have been an important source of the

observed improvements in the mental health of working lone mothers. We conclude that under a supportive policy environment employment can lead to improvements in lone mothers' mental health but that these gains are not automatic, as was the case in the 1990s when lone mothers saw no significant mental health benefits to work.

Keywords: lone mothers, work, welfare reform, mental health

Politicians and policy makers have long championed the idea that "work is good for you" not only for economic reasons but also because it brings wider benefits, including those to mental health (Department for Work and Pensions, 2007; Department of Health, 1999, 2004). Lone mothers are at particularly high risk of having poor mental health. In 2000 lone mothers had prevalence rates of depressive episodes three times higher than other groups (Targosz et. al, 2003) and numerous studies report have reported high rates of common mental health disorders including depression (see, for example, Hope, Power & Rodgers, 1999; Cairney, Boyle, Offord & Racine, 2003; Crosier, Butterworth & Rodgers, 2007). Far fewer differences in lone and partnered mothers' physical health are observed (Lipman, Offord & Boyle, 1997; Baker & North, 1999). In the mid-1990s employment rates among lone mothers in the UK were also very low, standing at just over 40 per cent and around 20 percentage points lower than those of mothers in couples (Gregg, Harkness & Smith, 2009). As part of its drive to eliminate child poverty the New Labour government set a 70 per cent employment target for lone parents and introduced a raft of policy changes to incentivise and support work. These reforms, because there were expected to boost employment rates, were also predicted to lead to improvements in mental health (Department of Health, 1998).

While the association between being in work and improved mental health is well documented for men (see, for example, Clark & Oswald, 1994; Winkelmann & Winkelmann, 1998; Helliwell & Huang, 2011) there is much less evidence on whether such a relationship exists for women or, more specifically, lone mothers. This paper asks: to what extent is the hypothesis that employment improves the mental health of lone mothers correct? The earlier literature showed that in the 1990s work had very little influence on lone mothers' mental health (Baker & North, 1999). However there is little recent empirical evidence on this question in spite of the fact that the last decade has seen considerable changes to the system of welfare provision with much greater support for those that want to work.

Using data from 18-waves of longitudinal data from the British Household Panel Survey (BHPS), an annual survey of around 10,000 individuals, this paper looks at the relationship between work and mental health for lone mothers in the periods before and after welfare reform. The experience of lone mothers is contrasted with that of partnered mothers, a group who were much less affected by these changes. Comparing changes in the relationship between work and mental health for lone mothers with those for partnered mothers allows us to assess how important changes in the system of welfare provision have been for lone mothers. Understanding how employment influences the mental health of lone mothers is important and has implications for family and social policies: should government push mothers into work, or should mothers be encouraged towards more traditional roles? Poor mental health not only has a direct impact on mothers but also matters to the well-being of their children (Kiernan & Huerta, 2008). For children in lone parent families this is particularly important as a large number of studies show maternal depression to be an important factor mediating the negative relationship between lone parenthood and children's outcomes (Carlson & Corcoran, 2001; Osborne & McLanahan, 2007).

The rest of this paper is organised as follows. In the next section we set out how employment might be expected to influence mothers' mental health and why we might expect to see differences between lone and partnered mothers. Section 3 describes key changes to the UK system of welfare provision from 1999. In Section 4 we describe the data used in this study and Section 5 sets out our research methods. In Section 6 the findings are reported. Section 7 discusses the findings and concludes.

THE RELATIONSHIP BETWEEN EMPLOYMENT AND MENTAL HEALTH

For men there is now ample evidence that work matters to mental health, with cross-sectional and longitudinal evidence showing that being out of work is associated with its deterioration

(Artazcoz et al, 2004; Clark, 2003; Dhaval, Rashad & Spasojevic, 2008). There are two pathways driving this relationship: (i) loss of income and (ii) loss of social standing because of the role that work plays as a "provider of social relationships, identity in society and individual self-esteem" (Winkelmann & Winkelmann, 1998, p 1). The empirical literature finds this second pathway to be of most importance with numerous studies showing the "non-pecuniary" costs of job loss to mental health being much more substantial than those arising from financial loss (Winkelmann &Winkelmann, 1998; Helliwell & Huang, 2011).

But to what extent does the relationship between work and mental health hold for women and in particular lone mothers? Women may find many of the "non-pecuniary" benefits from work, which are so important to men, elsewhere. Women's social relationships and identity may be forged through their roles as parents and carers (Himmelweit & Sigala, 2004) and, for those with partners, social status may be more closely linked to their partners' job than their own. In addition, as many partnered mothers are second earners the pecuniary gains from work are often less critical to the family income than the earnings of men. The loss of earnings from not working is therefore likely to have a smaller effect on partnered women's mental health. Not only may work be less important to mothers' identity and social standing than for men, but in some cases it may actually be damaging. For many mothers there remains a conflict between their roles as workers and carers, society on the one hand increasingly valuing individuals according to the work they do, while on the other hand norms around "good parenting" pressurise mothers to stay at home (Fortin, 2005).

There are good reasons to believe that the relationship between work and mental health may also differ for lone and partnered mothers. First, lone mothers report lower levels of social support and greater isolation than married mothers (Cairney et al, 2003). Work is therefore likely to play a more important role in providing social relationships. Second, lone mothers cannot depend on a partner for their own social status so their own social standing, which is

influenced by being in employment, will be of greater importance to their mental health. Third, levels of benefit dependence in the UK are high among non-employed lone mothers and not working remains a source of social stigma (British Social Attitudes Survey, 2014), which is likely to be damaging to mental health. Finally, lone mothers own earning are a much more important determinant of family income than those of mothers in couples.

Together these factors would lead us to expect lone mothers to experience larger mental health benefits from work than partnered mothers. However other factors work to offset these potential gains. In particular the jobs lone mothers do are often poor quality and low paid (Edin & Lein, 1997; Evans & Harkness, 2004). Poor quality jobs can be as bad for mental health as unemployment (Broom et. al., 2006) and this may be limit the mental health benefits to work (OECD, 2012). Working lone mothers also likely to face greater "role strain" from balancing work and parenthood as they do not have a second adult to share the responsibility of childcare with. The net effect of employment on the mental health of lone mothers, and how this might differ between lone and partnered mothers, is therefore ambiguous.

A growing literature suggests that the well-being of individuals may adapt to major life events such as marriage, divorce, childbirth or unemployment (Clark & Georgellis, 2013). It may be the case that mental health is boosted when individuals first move into work, but that they subsequently adapt to their new circumstances. Conversely, when individuals leave employment mental health may initially deteriorate but recover with time. Evidence for men suggests that unemployment, unlike many other major life events, has a long-term detrimental impact on mental health (Clarke & Georgellis, ibid). But effects for mothers, and particularly lone mothers may differ. The "honeymoon" of taking up employment may be offset if movements into work lead to greater stress as mothers and children adapt to new childcare routines. Differences in economic resources and levels of social support between

lone and partnered mothers mean that differences between mothers are likely to emerge (Ali & Avison, 1999). Finally, job quality matters to mental health (Broom et al, 2005). However, as women's motivation for work differs to that for men, the effect of job quality on mental health may also differ. As a result, even low quality jobs may still provide some benefit to mental health.

This study is particularly interested in whether the relationship between employment and mental health changed for lone mothers over the period of welfare reform. Welfare reform substantially changed the support available for lone mothers that wanted to work. These changes, which are described in greater detail below, included improved financial incentives to work, greater availability and affordability of formal childcare, and greater support for lone mothers wanting to work. As a result of these changes we would expect to see an improvement in the mental health benefits from employment in the period after welfare reform.

LONE PARENTS AND THE WELFARE REFORM IN THE UK

Since 1999 state support for lone parents in the UK has undergone substantial change (see Waldfogel, 2013 for a comprehensive review of reforms to the welfare system). Welfare reforms in the UK took a two-tack approach with policy change aiming both to improve financial incentives for work and to assist lone parents find and remain in employment through the introduction of active case load management. The first phase of reform, from 1999 to 2003, saw financial incentives to work improve considerably as a result of the introduction of Working Family Tax Credits (WFTC). This ensured that lone mothers were always better off in work than on benefits, as long as they worked a minimum of 16 hours a week, and included a substantial increase in financial support for childcare. Active caseload management was introduced at around the same time with the New Deal for Lone Parents

and Job Centre Plus providing tailored support to help single parents find work that could be fitted around childcare responsibilities. These programmes were aimed at those that wanted to work, and participation in these programmes was entirely voluntary. A second sweep of reform, from April 2003, consolidated and extended the earlier reforms with WFTC being replaced by two new tax credits, the Working Tax Credit (WTC) and Child Tax Credit (CTC). These changes were "much more important and far-reaching than the previous changes" (Brewer 2003: p3). A further push towards meeting the 70-percent lone parent employment target was made with the roll out of Work Focussed Interviews (WFIs) from 2002. This introduced the first element of compulsion to benefit receipt for lone parents, with the requirement that claimants with children over-5 should attend an interview to discuss the possibility of work every 6 months.

The policy environment in place before 1999 in contrast had had little expectation that lone parents should work, and provided little support or encouragement for them to do so. Welfare reform therefore marked a substantial shift away from a male breadwinner / female carer model of society to one where all adults, with few exceptions, were expected to work (Rowlingson & Millar, 2002). This expectation, until 2008, was mostly managed through the provision of support and incentives to work. Those out of work also saw changes over the period, with benefit levels rising as part of the governments drive to reduce child poverty. Gains in employment were achieved in spite of these increases in out-of-work benefits.

DATA AND DEFINITIONS

Data and Sample Selection

The data used in this paper comes from the British Household Panel Survey (BHPS), a longitudinal panel survey of private households conducted over 18-waves and collected annually from 1991-92. The survey collects a rich set of data on individuals' socio-economic

circumstances, health and wellbeing. The first wave of the survey contained observations on over 5,000 households and 10,000 individuals. Later waves saw the addition of booster samples were for Scotland, Wales and Northern Ireland. As samples of lone parents in the BHPS are relatively small, all samples are included and weights are used to adjust for any sampling differences. The analysis is confined to those mothers of prime working age (defined as under-55) with dependent children under-16. Students in full-time education and the self-employed (who account for around 2% of all lone mothers in both periods, and for whom work is likely to offer different constraints and opportunities) are excluded. Mothers are defined as lone mothers if they do not live with a married or cohabiting partner. Partnered mothers may be married or cohabiting. In the longitudinal analysis, observations on lone mothers are included in the analysis only for the duration over which they are observed as lone mothers. Once they cease to be lone mothers (around 1-in-5 lone mothers in any year), either because they re-partner or cease to have dependent children, they are excluded from the sample. Finally, at any point in time around 1-in-5 lone parents have been a lone parent for less than a year and this is a time when the risk of poor mental health is particularly high. Studies of partnership dissolution show that mental health worsens around the time of separation, but returns to previous levels around two years later (Blekesaune, 2008; Laporte & Windmeijer, 2005). To account for these "transition effects", which not only have an adverse effect on mental health but also are associated with employment transitions (Gregg et al., 2009), the analysis of lone mothers is confined to those who have been single for a year or more. There are theoretical reasons to expect the relationship between work and mental health to differ between single mothers and those in couples, as outlined above, and a Chow test confirms that these differences are statistically significant. The analysis throughout the paper is therefore carried out separately for mothers who live with a partner (whether married

or cohabiting) and lone mothers (those who do not live with a partner but have dependent children).

Measurement of Mental Health

The paper uses a measure of common mental disorders derived from the General Health Questionnaire (GHQ), a widely used measure of mental distress first developed as a screening instrument to detect psychiatric disorders (Goldberg, 1972). Respondents answer a 12-item self-completion questionnaire asking about recent changes in individuals' mental health. The questions asked are whether respondents have: (a) been able to concentrate; (b) had loss of sleep; (c) feel they are playing a useful role; (d) are capable of making decisions; (e) are constantly under strain; (f) have problems overcoming difficulties; (g) enjoy day-to-day activities; (h) are able to face problems; (i) are feeling unhappy or depressed; (j) are losing confidence; (k) believe in their self-worth; and (l) their general happiness. Responses to each question are coded as 0 = not at all, 1 = no more than usual, 2 = rather more than usual, 3 = much more than usual. The sum of the scaled variables gives a summary measure of mental distress, the GHQ-36, a continuous measure which takes values from 0 to 36 and has been shown to resemble a normal distribution (Welch, Holt, Twigg, Jones & Lewis, 2003).

The second measure defines those individuals who are at a high risk of "poor mental health" (or "cases"). Recoding the 12 questions above, a score of 0 being given where there is no indication of a psychological stress (responses 0 or 1 above) and 1 where stress is indicated (responses of 2 or 3), the scores are then summed across the twelve variables giving an index ranging in value from 0 to 12. "Cases" are defined as those individuals recording a score of 4 or more and is used to identify those at high risk of poor mental health. This indicator variable is widely used as a screening device for psychiatric disorders and is strongly correlated with mental health disorders that would be diagnosed by a clinician (Goldberg &

Williams 1988; Papassotiopoulos & Heun, 1999). In 2012, 18% of all women in England had a GHQ-12 score of 4 or more, with no significant change in this level since 1995 (Health Survey for England, 2013). Other measures suggest similar prevalence rates for common mental disorder, the 2007 Adult Psychiatric Morbidity Survey (APMS) for England, for example, finds 1-in-5 adults aged 16-64 to meet the criteria for at least one common mental disorder - conditions that "cause marked emotional distress and interfere with daily function, but do not usually affect insight or cognition. They comprise different types of anxiety and depression" (McManus et al, 2009: p25).

Employment measures

Employment status is defined for all those holding a job. The initial analysis included separate variables for full- and part-time work but, as coefficients on the effect of full-time or part-time work on mental health did not differ significantly, the reported regression result include only dummy variables for being in employment or not. Unemployment and inactivity are not distinguished between as sample sizes for the unemployed are small. Occupations are controlled for using standard occupational classifications (SOC) which cover nine job categories – managerial, professional, associated professional, administrative, skilled manual, personal service, sales, operative and elementary occupations.

Explanatory Variables

Income may be important in mediating the relationship between mental health and employment. As employment status and income are closely linked, particularly for lone parents but also for those in couples, inclusion of controls for income are particularly important. Income is measured as the log of annual household income, a measure that has been used extensively in other studies of the relationship between income and mental health. The coefficient on the log of income shows how mental health changes in response to proportionate changes in income, rather than changes in levels. Models were estimated both

with just employment and then adding additional controls for income. The inclusion of income has very little effect on the coefficients on the employment dummies. As a robustness test the models were also run using alternative income specifications. In particular the models were run with dummy variables for income quintile. The coefficients on the employment variables were insensitive to this changes in specification, and income quintile had no significant effect on mental health in either period for lone mothers. Only results for the full models with both income and employment are therefore reported.

The literature has extensively discussed the role of financial stress and poor health in influencing the risk of having poor mental health, although the measures included have often been self-reported and subjective (see, for example, Crosier, Butterworth & Rodgers, 2007). Recent studies suggest that subjective measures of financial stress are endogenous to depression with, all else being equal, those in poor mental health more likely to report financial stress (Bridges & Disney, 2010. Therefore we include only an objective measure of financial stress. Following Bridges and Disney, financial stress is measured using an indicator of whether individuals are two or more months behind in housing arrears. In order to check for collinearity between the income and arrears variables the models are again run both with and without arrears. The results show that the coefficients are stable and the results are therefore reported only with full controls.

Similar problems of endogeneity bias are likely to arise from the inclusion of subjective measures of health status. In the BHPS poor health is measured using respondents answer to a question about whether they suffer from one or more of a specific set of conditions listed on a card. Specifically, individuals are asked whether they have any of a range of conditions: problems or disability connected with: arms, legs, hands, feet back, or neck (including arthritis and rheumatism); difficulty in seeing (other than needing glasses to read normal size print); difficulty in hearing; skin conditions /allergies; chest/breathing problems, asthma,

bronchitis; heart/high blood pressure or blood circulation problems; stomach/liver/kidneys or digestive problems; diabetes; anxiety, depression or bad nerves, psychiatric problems; alcohol or drug related problems; epilepsy; migraine or frequent headaches; cancer or stroke. A new variable reflecting poor physical health is assigned a value of 1 if individuals respond yes to any of the above other than the question on "anxiety, depression or bad nerves, psychiatric problems" and 0 otherwise.

Demographic variables that are related to mental health are also included in the regressions. These include a quadratic in mothers' age, and educational attainment (Degree, A level or equivalent, 5+ GCSEs or equivalent, less than 5 GCSEs and no qualifications). Dummy variables for age of youngest child are chosen to include children age 0-2, 3-4 and 5-11. These ages reflect changes in childcare and schooling arrangements, which children aged 3- able to attend pre-school, those age 5 to 11 attending primary school and those over 11 secondary school. Controls for the number of children (dummy variables for 2 and 3 or more children) are included. Marital status has been linked to well-being with lone mothers who were previously married being less happy (Afifi, Cox & Enns, 2006) while marriage is associated with improved mental health for those with partners (Horwitz & White, 1998; Lamb, Lee & DeMaris, 2003). Controls are therefore included in the multivariate analysis with dummy variables for having been previously married for lone mothers, and for being married for mothers in couples.

Choice of time periods

The periods chosen reflect two distinct regimes: 1993-1998 which preceded welfare reform, and 2003-2008 by when the welfare system had been extensively reformed. The period 1999 and 2003 can be considered a period of transition with changes to the welfare system being rolled out over this period. Results for 1999-2003 lie somewhere between those of the early and later period, but because of space constraints, only descriptive statistics for this period are

reported (Table 1). A Chow test justifies the separation of time periods and show a statistically significantly change in the models' coefficients over time.

METHODS

The paper uses panel data is used to estimate the effect of work on mental well-being. Model (1) examines the cross-sectional relationship between employment and mental health and is estimated by pooling data in the pre and post welfare reform periods and implementing standard regression techniques. The general form of the equation estimated is a simple linear model of the form:

$$MH_{it} = b_0 + b_1 E_{it} + b_2 X_{it} + u_{it} \qquad (1)$$

Where MH is a measure of mental health, E is a dummy variable for employment status (0 = not employed; 1 = employed), and X is a vector of individual and household characteristics. Variations across years are allowed for by including dummy variable for the year of survey. As individuals may be observed more than once in the panel standard errors are clustered on the individual. Robust standard errors are reported.

While the cross-sectional analysis may suggest a relationship between work and poor mental health, in practice at least some of the cross-sectional differences that are observed are likely to be attributed to unobserved differences between those in and out of work. Other factors, which are difficult to quantify, may influence the risk of depression (for example, a genetic predisposition to depression, significant "life events" and early childhood experiences, see Foley et al, 2001), and these unobservable characteristics may also influence employment. To account for unobserved heterogeneity, the panel element of the BHPS data is therefore exploited and the model is estimated using fixed effects (FE) estimators. This gives a better indication of whether a causal relationship exists. The fixed effects linear model takes the form:

$$MH_{it} = b_0 + b_1 E_{it} + b_2 X_{it} + v_i + u_{it} \qquad (2)$$

where v_i is an individual level fixed effect).

It may be that it is not just employment status at a point in time that matters to individuals' well-being - psychological well-being may be boosted when individuals' move into work, but these mental health benefits may not be sustained (and vice-versa when employees exit work). Movements into and out-of-work may also have an asymmetric effect on well-being (Flint et al, 2013). Testing to see whether the mental health benefits (costs) of moving into (out of) work are larger when individuals have just made the transition is important given the emerging evidence that individuals adapt to many major life events (Clark & Georgellis, 2013). To disentangle the effect of transitions into and out of work from the longer term effects of changes in employment status on mental health, a further set of models are also estimated including a set of variables which more fully describe changes in employment status between waves. These are estimated using cross-sectional data with the inclusion of a lagged dependent variable to account for potential state dependence (Steele, French & Bartley, 2013).There may however be other unobservable characteristics which influence both the likelihood of employment and poor mental health and a caveat of this model is that, unlike in the FE model, these are not conditioned on. The estimated model using cross-sectional data with lagged information therefore takes the form:

$$MH_{it} = b_0 + b_1 MH_{it-1} + b_2 EE_{it} + b_3 NE_{it} + b_4 EN_{it} + b_5 X_{it} + u_{it} \quad (3)$$

Where EE is equal to 1 if the individual was employed in period t and period t-1 and zero otherwise; NE is 1 if they were not employed in t-1 but employed in period t, zero otherwise; and EN is 1 similarly given a value of 1 if employed in period t-1 but not employed at t. The omitted category is that where the individual is not employed in either period. Results are reported with the model being built sequentially, first including only employment dummies and then controlling for mental health in period t-1. This allows us to gain a fuller

understanding of the role that employment transitions play in influencing mental health, and the role of initial conditions play in influencing this relationship.

The final model looks at the effect of occupation on mental well-being to see which occupations are associated with improvements in mental health. This takes a similar form to equation (3) and is estimated as:

$$MH_{it} = b_0 + b_1 MH_{it-1} + b_2 SOC_{it} + b_3 X_{it} + u_{it} \quad (4)$$

Here the employment dummy variables are replaced by SOC, which represents a set of 9 dummy variables for occupational status (the omitted category being not working). Results are reported both with and without lagged mental health.

Models are estimated using a dichotomous variable (described in greater detail below) which takes the value 1 for those at high risk of poor mental health ('cases') and 0 for all others. Models are estimated using a linear probability model (LPM). The LPM model has the advantage of being easily interpretable, and in the FE models of retaining observations where the dependent variable does not vary (in the fixed effect logit models sample sizes fall by more than half). The marginal effects from logit models however produce very similar results to the LPM (see note to Table 2). The models were also run on a second measure of mental health, the GHQ-36, which takes values from 0 to 36 and has a distribution resembling normality (Welch et. al., 2003). For this variable models were estimated using ordinary least squares (OLS).

All models are estimated separately for single and partnered mothers in two time periods, 1993-1998 and 2003-2008, which represent periods before and after welfare reforms were first introduced in 1999. Comparing the coefficients on the employment variable for partnered and single women in the pre and post reform periods (the difference-in-difference) gives an indication of how welfare reform has altered the relationship between mental health and work for lone mothers.

RESULTS

Descriptive Analysis: Employment and Mental Health

Figure 1 shows how poor mental health (or "caseness") and the GHQ-36 vary by employment status for lone and partnered mothers in 1993-98 and 2003-08. Table 1 reports the same information but in greater detail for lone and partnered mothers and includes summary statistics for 1999-2003. Lone mothers see substantial changes in mental health over time. In 1993-98 rates of poor mental health were similar among lone mothers that were in or out-of-work, at around one-in-three. By 2003-08 this picture had changed substantially, with this share dropping considerably over the decade for working lone mothers but rising among those not in work. As a result by 2003-08 poor mental health among lone mothers had become strongly correlated with employment status, lone mothers being 15-ppt less likely to have poor mental health than those not in work if they worked part-time, and 21-ppt less likely if they worked full-time. The results for the intervening period, 1999-2003, lie between those for 1993-98 and 2003-08, which is as expected over this period of transition. For working mothers with partners the rate of poor mental health changed very little over the decade, affecting around 1-in-5. Work was, in all periods, associated with better mental health and over time there was a small improvement in the mental health for both those in and out work. Our second measure of mental health, the GHQ-36, shows a similar pattern of change for both lone and partnered mothers.

One reason that mental health may have improved among working lone mothers could be that reforms to the welfare system have increased incomes and reduced financial stress. A cursory examination of the data does not however suggest a clear correlation between position in the income distribution and the prevalence of poor mental health for lone mothers: those in the top income quintiles have similar rates to those in the lowest quintiles. For mothers in

couples, rates of poor mental health fall between the bottom and middle of the income distribution where-after they plateau.

Those that work may have different characteristics to those that do not, and these differences may also influence the risk of poor mental health. Similarly, changes in the characteristics of lone and partnered over time may have contributed towards the observed changes in mental health. The subsequent analysis therefore uses multivariate analysis to account for differences, and changes, in characteristics. The mean values of these characteristics, as well as all for the dependent variables used in the paper, are reported in Appendix Table A1.

Multivariate Analysis

Table 2 reports results from the LPM, and FE models for our binary measure of "poor mental health", and for OLS and FE models for the GHQ-36. Preliminary analysis included separate dummy variables for the effect of full and part-time work on mental health. As no statistically significant difference in coefficients was found the models that are reported only include a single dummy variable for employment. The results show that for lone mothers' employment had no statistically significant effect on the probability of having poor mental health in 1993-98 in either the LPM or FE models, but that by 2003-2008 work was associated with a large and statistically significant fall (of 12.1% in the FE models). For the lone mothers, the FE coefficients on employment are smaller than those estimated in the LPM, suggesting that there is some selection of lone parents with better mental health into work. . The results for our second measure of mental health tell a similar story, work being associated with a fall in the GHQ-36 score of 1.961 in the fixed effects model in the post reform period but having no significant effect when fixed effects are accounted for in the period prior to reform.

For mothers with partners, employment is associated with a 4 to 5 per cent reduction in the risk of poor mental health, with no change in the magnitude of this effect over the decade. Among partnered mothers employment leads to a fall in the GHQ-36 too, but the magnitude

of this effect was much smaller (.508 points in 1993-98 and .781 in 2003-08 in the FE models) and showed little change over the decade. The coefficients on the others sets of controls are also reported for each of the models. Income is found to have very little influence on mental health (this was also true when employment was excluded from the model). Few of the other coefficients showed a statistically significant relationship with mental health, with the exception of physical ill-health and being in housing arrears which are both related to an increased risk of having poor mental health.

One concern is that there may be a correlation between income and work: it may be that the rise in income that results from work, rather than work itself, leads to improved mental health. If this is the case, then we would expect to see a positive association between income and mental health when controls for employment are excluded. Models were run therefore with controls for (i) employment, (ii) income, (iii) income and arrears, (iv) income and employment, and (vi) employment, income and arrears. The results from these fixed effect models, while not reported here, showed that in 1993-98 neither work nor income showed a statistically significant association with mental health for lone mothers under any of the specifications. Similarly, in 2003-2008 income again showed no significant association with mental health even when employment controls were excluded. The employment variable, on the other hand, was always significant and varied little with the addition of controls for income. As another specification test we also looked at whether income had a non-linear effect of income on mental health by including dummy variables for income quintiles. For lone mothers this changed the coefficient on employment (reported in Table 2) from -.060 to -.065 in the fixed effect model for 1993-1998, and the coefficient remained insignificant at 10 percent significance. The quintile dummy variables were also insignificant. In period 3, the coefficient on employment in the fixed effect model with quintile dummy variables to control

for income was -.124 (compared to -.121 with log income) and remained highly significant. Again the income quintile controls were insignificant.

Table 3 examines whether the observed effect of employment on mental health are permanent or transitory. Because of space constraints only the coefficients on the employment and income variables are reported. The models are estimated first with a single control for employment (Model 1) and then with a set of three dummy variables for employment transitions over two periods (Model 2). Results are reported both with and without the inclusion of the lagged dependent variable. The coefficients on the employment dummy variables without a lagged dependent variable are the same as those reported in the LPM / OLS models in Table 2. The inclusion of lagged dependent variables reduces the size of this coefficient and results in coefficients similar to those reported in the FE models in Table 2.

For lone mothers we again find employment to be associated with improved mental health only in the period after welfare reform once unobservable differences are conditioned on (in the FE models). The coefficient on the lagged dependent variable suggests state dependence in mental health for both lone and partnered mothers. Inclusion of the set of employment dummy variables reflecting employment transitions show that first, for lone mothers in 1993-98, there was no significant difference in the risk of poor mental health between those that were not employed in either period; those who were in work in both periods; those who moved into work; or those who exited employment. By 2003-08 however those that stayed in work and those who moved from non-employment into work were significantly less likely to have poor mental health than those that did not work in either period, by 10 and 22 per cent in the models which control for previous lagged mental health respectively. For lone mothers therefore the mental health benefits of taking up a new job in 2003-08 were substantial. While there is some evidence of partial adaptation to being in work, the beneficial effects of being in work are not just temporary and mental health benefits also observed for those with

longer duration of employment. However, there are also negative effects for mental health for those who have stopped working in the last year. Partnered mothers too had reduced rates of poor mental health if they worked, although the effects were smaller than for lone mothers in 2003-08 and declined over time. The results using the GHQ-36 show very similar patterns, with staying or moving into work having a large effect on the well-being of lone mothers in 2003-08 (but no effect in 1993-98) while for partnered mothers the effects are smaller and exhibit little change over time.

What effect does occupation have on the mental health benefits to work? The results from the analysis of the effect of occupation on mental health are reported in Table 4. These suggest that for lone mothers gains were not just confined to those with "good" jobs. In 1993-1998 few occupations were associated with improved mental health (compared to being out of work) but by 2003-2008 there almost all occupations were associated with statistically significant reductions in the risk of poor mental health and a fall in GHQ scores. Compared to those out of work the risk of poor mental health was 11 per cent lower for managers, 14 per cent for professionals, 19 per cent for those in administrative jobs, 13 per cent for those in personal services and 14 per cent for those in sales. For machine operatives, those in elementary occupations and skilled manual jobs no statistically significant effect was found, although few lone mothers were employed in these job categories. A notable difference between lone and partnered mothers was that for partnered mothers the effects were much smaller, although they have a greater influence on reducing GHQ scores than poor mental health.

A number of other regressions (not reported here) were run to check whether the relationship we observed between mental health and employment differed across sub-groups of lone mothers in 2003-08. First, we tested whether gains to work differed by mothers' educational attainment was tested. The results showed little difference across these groupings, work

mattered to all lone mothers and its effect on well-being was if anything slightly larger among the less educated. Second, we looked at whether differences in mental health benefits to work were observed for those with younger and older children, The results again showed that there were few differences in the mental health benefits to work between those with children under 5 and those with older children, an important finding in light of the fact that policy has increasingly in recent years used age of youngest child to define policies around lone parent employment. For those with younger children work may be particularly important for providing a break from caring, and these women may find the transition back to work easier than those with older children who may have spent longer out of employment. Finally, it is also plausible that employment may have a different effect on the mental health of those that have poor mental health. To see whether or not this was the case, the fixed effects model described in (2) was run on a subset of lone parents classed as "cases" in period t-1. The results suggest that even among this sub-sample of those in the poorest mental health the benefits of work are substantial.

One concern is that the share of non-working lone mothers with poor mental health has been rising. An important question is whether policy change has led to this deterioration in the mental health of this group, or whether there have been changes in their characteristics that have contributed towards this rise. It is possible to examine the reasons for change by predicting the expected level of poor mental health among the out of work sample in 2003-2008 using the coefficients from the 1993-1998 LPM model of poor mental health. Fitting the observed characteristics of non-working lone mothers in 2003-2008 to this model predicts that the rate of poor mental health among non-working lone mothers would have risen from 31 to 39 per cent as a result of changes in characteristics alone (with a rise in the share reporting poor physical health being of particular importance). The actual prevalence of poor mental health in fact rose to 41 per cent. Changes in characteristics therefore explain a large

part of the observed change and suggest that this, rather than any fundamental change in the relationship between poor mental health and being out of work, has driven the observed increase among non-working lone mothers. A similar exercise can be carried out for those in work. For those in work, if only characteristics had changed, the rate of poor mental health, predicted using the 1993-1998 model, would have been expected to rise from 28 to 35 per cent. In fact it fell to 20 per cent.

DISCUSSION

The evidence presented in this study has explored the relationship between employment and lone mothers' mental health in the UK over two time periods, 1993-1998 and 2003-2008, periods that capture an era of substantial reforms to the UK's system of welfare provision. These reforms were expected to improve the mental health of lone mothers by raising their employment rates. Early studies of the likely effect of these reforms predicted that "the movement from 'welfare to work' is unlikely to improve the health of lone mothers" (Baker & North, 1999: pp121) because employment produced few benefits to mental or other health outcomes. These findings echoed those reported in studies of lone mothers elsewhere (Ali & Avison, 1999; Zabkiewicz, 2008). The results presented here add weight to the earlier findings of Baker and North (1999) for the pre-welfare reform period, but also shows that under the era of welfare reform there has been a fundamental change in the relationship between mental health and work with substantial improvements in the mental health of working lone mothers.

Other studies have similarly shown welfare reform to be associated with improvements in lone mothers' mental health in the UK (Gregg et al, 2009), although these gains were concentrated among those who had separated for a year or less, a group that are not considered here. Perhaps more surprisingly, similar mental health gains have also been seen

in the US in spite of the fact that welfare reform there, while associated with increased employment rates among lone mothers, did not raise incomes or reduce poverty (Herbst, 2013; Ifcher, 2011). Herbst suggests that US welfare reforms may therefore have "generated large non-monetary – or psychic – gains through its impact on employment" (p234). While the US evidence suggests that benefits to work might extend beyond those that accrue from increased income, none of these studies looked directly at the effect of employment on mental health or how it changed under welfare reform (they examine instead the influence of welfare reform on the mental health of all lone parents). Their conclusions instead rest on the assumption that employment leads to better mental health, and that increased employment rates have therefore driven these gains.

This study adds to our understanding of what has happened to the mental health of lone mothers over the period of welfare reform by showing that that there have been substantial mental health gains for *working* lone mothers. Indeed, the change in the relationship between work and mental health was so significant that by 2003-08 working lone mothers had no greater risk of poor mental health than married or cohabiting mothers. In 2003-08 work was associated with a reduced risk of poor mental health of between 12 and 18 per cent for lone mothers. This contrasts sharply with the situation in 1993-98 when there was little association between work and mental health; both those in and out of work had a very high risk of poor mental health. In the post reform period we also observe a "honeymoon" effect from taking up work, with large mental health benefits for those moving into work. However, unlike analysis of, for example, divorce the effects of taking employment on mental health are not purely transitory: those that are constantly employed are around 10 per cent less likely to have poor mental health than those not in work. This finding is in line with the results of Clark & Gerogellis (2013) who find that individuals adapt to most major life events (such as

divorce, widowhood and childbirth) with the exception of unemployment; and of Chadi and Hetschsko (2014) who find a honeymoon effect of job entry for all workers.

For partnered mothers, work is also associated with a lower risk of poor mental health, although the effects are much smaller than for lone mothers, and there is little change in this relationship over the decade. The absence of similar changes in the mental health of lone mothers adds considerable support to the notion that changes to the welfare system have been an important source of the changing relationship between work and mental health for lone mothers as alternative explanations, such as softening attitudes towards mothers who work, would have benefitted all mothers.

An alternative explanation for the observed change may be that the quality of jobs that lone mothers do has improved. However BHPS data shows no change in job satisfaction levels, a commonly used measure of job quality, among lone mothers over the period we study. For lone mothers the relationship between occupational status and mental health appears to be weaker than for other workers, with the mental health benefits of employment extending beyond those working in "good" jobs. Lone mothers saw mental health gains to work across the occupational spectrum with "jobs", rather than just "careers", mattering to their mental health. Other studies show the relationship between work status and mental health to be weaker for women than men (Llena-Nozal, Lindeboom & Portrait, 2004; Booth & Van Ours, 2008) and female levels of job satisfaction to be considerably higher than expected given objective employment conditions (Clark, 1997). As a result, even low quality jobs may still provide some benefit to mental health and for lone mothers in 2003-08 this was particularly likely to be the case.

Welfare reform saw improvements in income for both those in and out of work. It is therefore important to consider whether the mental health benefits to employment observed in the later period were due to this increase. The results clearly show that the improvements in mental

health among those in work cannot simply be attributed to the fact that welfare reform raised the return to working - even after conditioning on income the relationship between work and mental health holds, with employment showing a far stronger and more significant association than income. Numerous research papers similarly show that income bears only a weak relationship to mental health (Kahneman & Deaton, 2010; Zimmerman & Kanton, 2005) and Baker & North (ibid) in their study of lone mothers were similarly unable to confirm a statistically significant relationship between income and mental health. The research presented here also suggests that supporting lone mothers into work matters for reasons over and above any financial gains to employment.

This paper builds on a very large existing literature examining the effect of employment status on mental health. To date these studies have mostly looked at these effects for men. However, as with other studies in this area, estimating the effect of work on mental health has a number of limitations. While the use of panel data in this study means that it is possible to condition on unobserved, time invariant, individual characteristics that may influence both the risk of poor mental health and of non-employment, other sources of endogeneity bias remain. One concern may be that welfare reform may be associated with changes in selection into employment. However, if healthier individuals select into work, we would predict a decline in the mental health of working lone mothers in the post reform period. As the share of lone mothers in work increased sharply over the period, we would predict that there should be less selection into employment in 2003-08 than in the mid-1990s. The results, however, show that the opposite happened, with the mental health of working lone mothers improving in the post-reform period. This implies that selection cannot explain the results, and the change in mental health benefits from employment is, if anything, under-estimated. A second potential issue is endogeneity bias. Winkelmann & Winkelmann's (1998) well-known study of unemployment and happiness found that the detrimental effect of unemployment for

mental health was the same regardless of the reason for job termination. They conclude that their results "are consistent with the interpretation that unemployment can be treated as exogenous, and hence causal, for satisfaction" (p8). Other studies corroborate this finding. For example, Steele, French & Bartley (2013) look at how selection-bias effects the relationship between mental-health and employment. They find strong evidence of indirect selection (resulting from unmeasured confounders) but less support for direct selection (from reverse causality), and that a strong relationship between mental health and employment transitions remains after accounting for potential selection bias. It is important to note however that the study is however one of common mental disorders. The socio-economic patterning of common mental disorders differs from that of serious mental ill health (Lahelma et. al. 2006) and similar findings may not apply to those suffering from major depressive disorders for whom the issue of reverse causality is likely to be highly significant (OECD 2012).

Welfare reform between 1999 and 2008 in the UK was largely based on improving incentives and opportunities for lone parents to work. This was done by giving lone parents substantial financial incentives (as long as they worked 16-hours or more a week); improving the availability and financial support available for childcare; and through the provision of a package of personalised support to help parents into work through the New Deal for Lone Parents. These policies had little compulsion attached to them, while for those not in work benefit levels saw a substantial rise. This study shows that not only did employment and incomes rise among lone parent families, but so too did the mental health benefits associated with paid work. The data that was analysed for this study examined the labour market and policy environment to 2008. Since then the recession and a hardening policy environment will have considerably changed the context for lone parents both in and out of work. A continuing weak job market together with policy reforms which increase the pressure on non-

working lone parents to find jobs, and which reduce the support available for those in work, may push up the rate of poor mental health in the coming years. As this research has shown, the link between employment and improvements in mental health is not an automatic one – in the absence of an enabling policy environment mental health benefit from work may not be achieved, as was the case in the mid-1990s.

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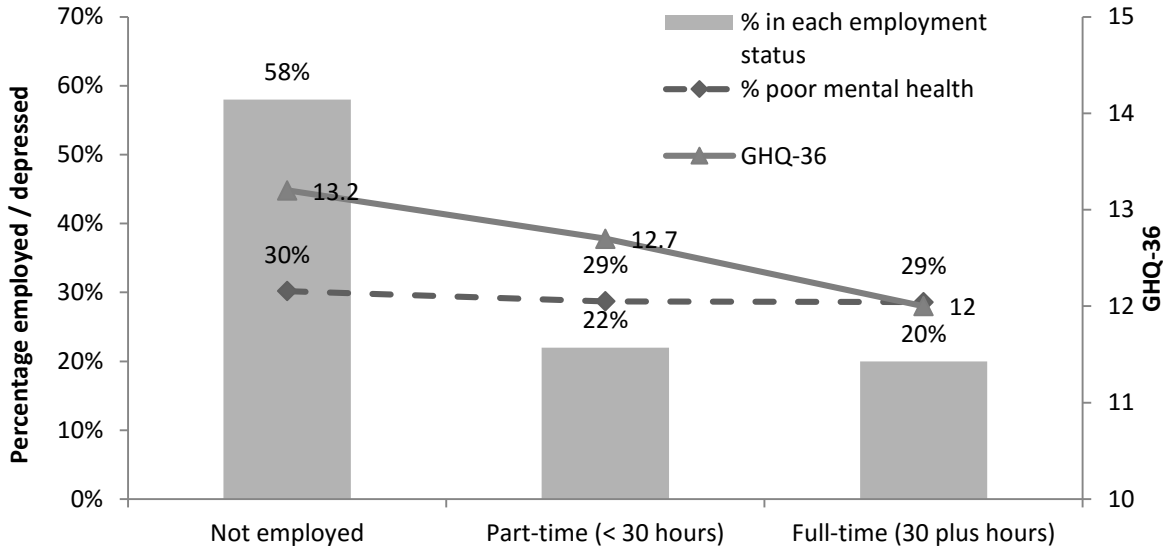
Appendix Table 1: Mean values

	Lone Mother				Partnered mother			
	1993-1998		2003-2008		1993-1998		2003-2008	
	Mean	*std. error*	Mean	*std. error*	Mean	*std. error*	Mean	*std. error*
Mental Health								
Poor Mental Health	0.323	*0.013*	0.312	*0.009*	0.237	*0.005*	0.21	*0.004*
GHQ-36	13.1	*0.175*	13.2	*0.145*	11.8	*0.067*	11.6	*0.056*
Employment								
Employed	0.421	*0.013*	0.575	*0.01*	0.62	*0.006*	0.671	*0.005*
Employed t-1 & t	0.336	*0.013*	0.519	*0.01*	0.55	*0.006*	0.622	*0.005*
Not employed t-1, employed t	0.085	*0.008*	0.056	*0.005*	0.069	*0.003*	0.049	*0.002*
Employed t-1, not employed t	0.082	*0.007*	0.052	*0.005*	0.061	*0.003*	0.051	*0.002*
Not employed t-1 & t	0.496	*0.014*	0.373	*0.01*	0.319	*0.006*	0.278	*0.005*
Occupation								
Managerial	0.058	*0.006*	0.069	*0.005*	0.046	*0.003*	0.108	*0.003*
Professional	0.029	*0.005*	0.051	*0.004*	0.079	*0.003*	0.093	*0.003*
Associated professional	0.036	*0.005*	0.081	*0.006*	0.081	*0.003*	0.114	*0.003*
Administrative	0.097	*0.008*	0.139	*0.007*	0.178	*0.005*	0.163	*0.004*
Skilled	0.017	*0.003*	0.010	*0.002*	0.015	*0.002*	0.009	*0.001*
Personal services	0.099	*0.008*	0.112	*0.006*	0.128	*0.004*	0.128	*0.003*
Sales	0.051	*0.006*	0.079	*0.006*	0.068	*0.003*	0.051	*0.002*
Operatives	0.019	*0.004*	0.006	*0.002*	0.021	*0.002*	0.014	*0.001*
Elementary	0.064	*0.007*	0.042	*0.004*	0.064	*0.003*	0.044	*0.001*
Income and Debt								
Annual income (2012 prices)	16,438	*329*	25,580	*599*	42,616	*345*	51,787	*312*
Log income	9.498	*0.017*	9.952	*0.012*	10.493	*0.008*	10.718	*0.006*
Housing arrears > 2 months	0.052	*0.006*	0.034	*0.004*	0.022	*0.002*	0.011	*0.001*
Health								
Physical illness	0.571	*0.013*	0.58	*0.01*	0.485	*0.006*	0.507	*0.005*
Education								
Degree	0.07	*0.01*	0.09	*0.01*	0.10	*0.00*	0.21	*0.00*
A-level or equivalent	0.14	*0.01*	0.25	*0.01*	0.22	*0.01*	0.28	*0.01*
5+ GCSEs or equivalent	0.42	*0.01*	0.31	*0.01*	0.32	*0.01*	0.19	*0.00*
Less than 5 GCSEs	0.37	*0.01*	0.36	*0.01*	0.36	*0.01*	0.33	*0.01*
Demographics								
Age	33.4	*0.2*	36.5	*0.2*	36.0	*0.1*	37.7	*0.1*
Youngest child <=2	0.264	*0.012*	0.179	*0.008*	0.319	*0.006*	0.296	*0.005*
Youngest child 3-4	0.156	*0.01*	0.115	*0.007*	0.152	*0.005*	0.147	*0.004*
Youngest child 5-11	0.55	*0.014*	0.556	*0.01*	0.502	*0.006*	0.515	*0.005*
2 children	0.313	*0.013*	0.283	*0.009*	0.433	*0.006*	0.471	*0.005*
3 or more children	0.133	*0.009*	0.103	*0.006*	0.187	*0.005*	0.145	*0.004*
Single (never married)	0.37	*.01*	0.44	*0.01*				
Cohabiting (not married)					0.07	*0.00*	0.14	*0.00*

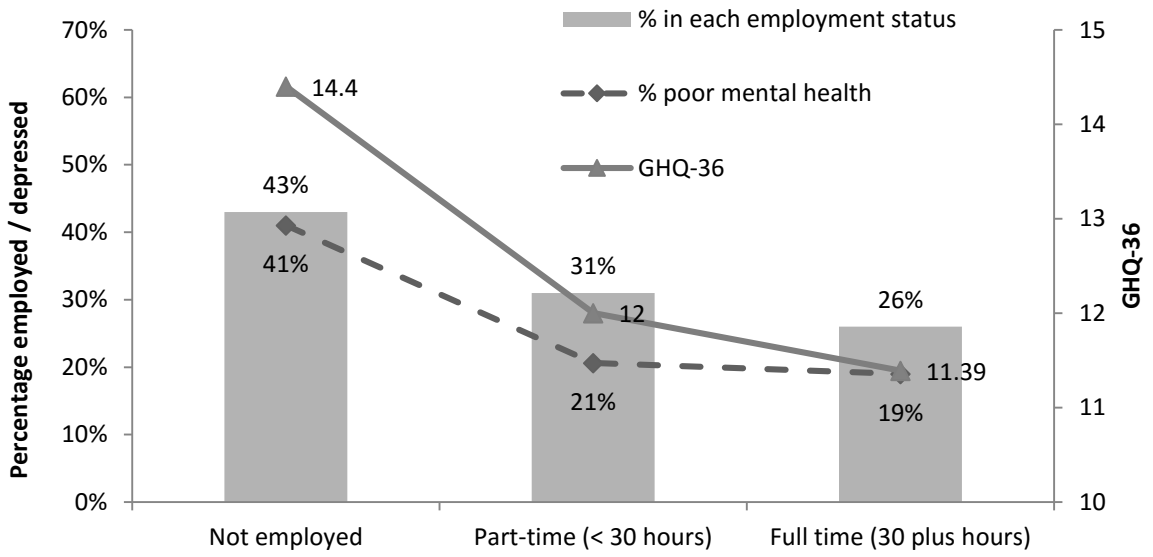
Figure 1: Employment status and Poor Mental Health

Lone Mothers

1993 to 1998

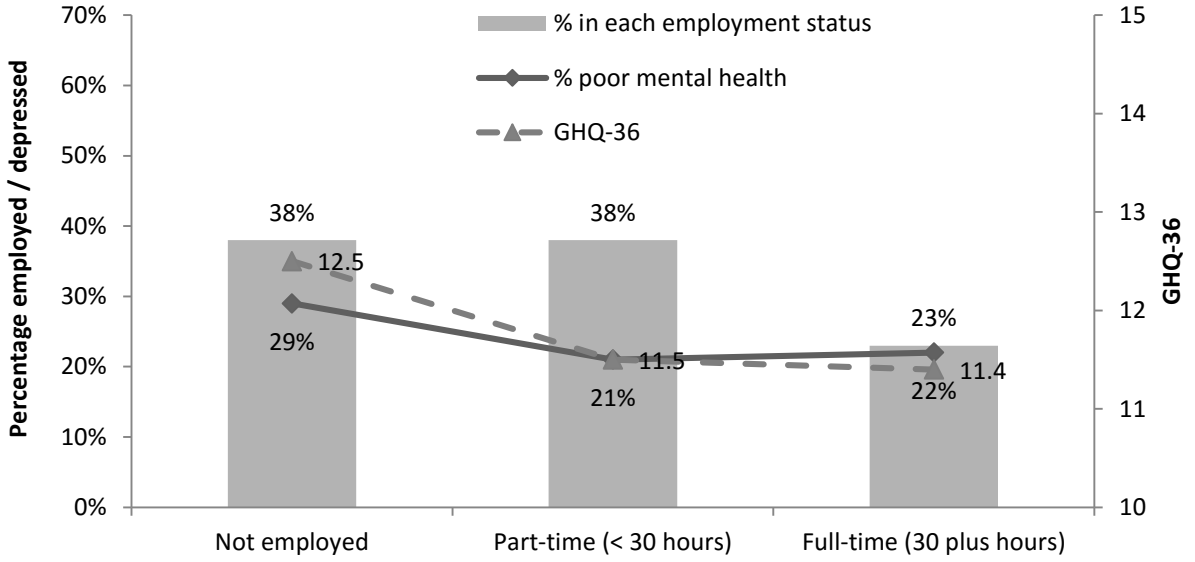


2003 to 2008



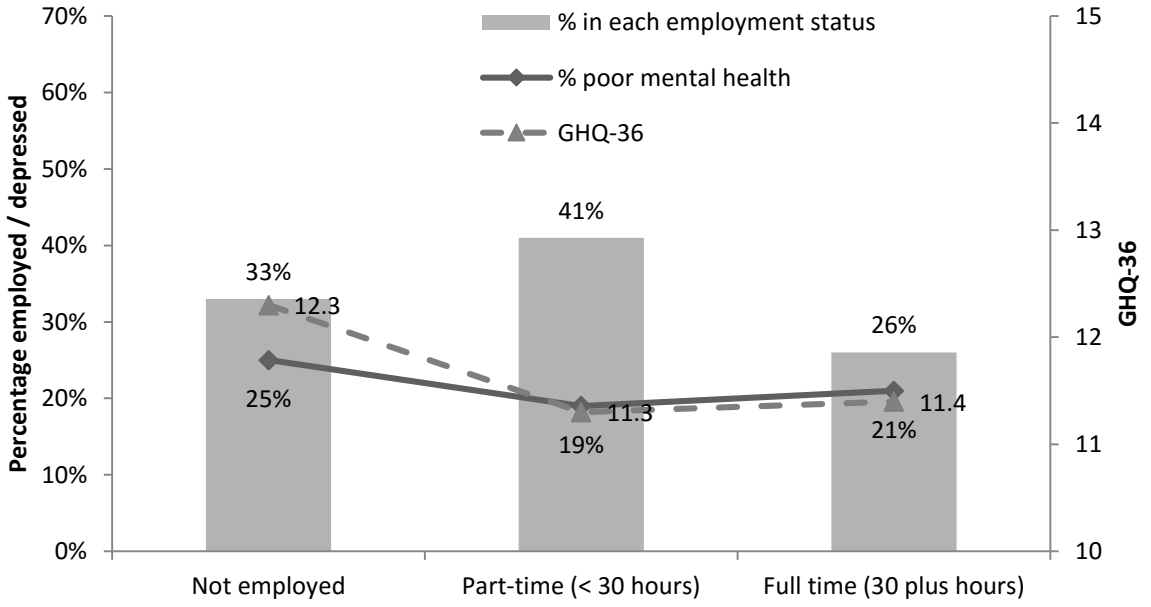
(ii) Mothers in Couples

1993 to 1998



*

2003 to 2008



Source: Author's calculations, British Household Panel Survey

Table 1: Mental Health and Employment, 1993-98, 1999-2003 and 2003-2008

	1993-1998		1999-2002		2003-2008		Change in mean between 1993-98 & 2003-08	
	Mean	std.error	Mean	std.error	Mean	std.error		
Share with "poor mental health"								
Lone mothers								
All	0.293	0.013	0.280	0.011	0.290	0.010	-0.004	
Not Working	0.302	0.018	0.306	0.016	0.408	0.016	0.106	* **
Working	0.283	0.019	0.258	0.015	0.201	0.012	-0.081	**
Full-time	0.286	0.018	0.228	0.011	0.193	0.008	-0.092	*
Part-time	0.287	0.017	0.284	0.013	0.206	0.008	-0.081	**
Partnered mothers								
All	0.241	0.005	0.222	0.005	0.216	0.004	-0.025	**
Not Working	0.288	0.009	0.252	0.008	0.252	0.007	-0.036	**
Working	0.211	0.006	0.205	0.006	0.198	0.005	-0.014	**
Full-time	0.218	0.005	0.201	0.004	0.206	0.004	-0.012	*
Part-time	0.208	0.004	0.207	0.004	0.191	0.003	-0.017	**
GHQ-36								
Lone mothers								
All	12.80	0.18	12.40	0.15	12.87	0.15	0.07	
Not Working	13.15	0.25	13.10	0.23	14.41	0.25	1.26	**
Working	12.35	0.25	11.81	0.19	11.72	0.17	-0.63	**
Full-time	12.01	0.75	11.47	0.56	11.39	0.47	-0.62	**
Part-time	12.68	0.76	12.11	0.55	12.00	0.48	-0.68	
Partnered mothers								
All	11.88	0.06	11.75	0.06	11.68	0.05	-0.20	**
Not Working	12.54	0.11	12.41	0.11	12.32	0.10	-0.22	*
Working	11.46	0.08	11.39	0.07	11.36	0.06	-0.11	**
Full-time	11.38	0.28	11.23	0.24	11.43	0.21	0.05	
Part-time	11.53	0.22	11.53	0.22	11.33	0.18	-0.21	**

Note: Authors calculations from the BHPS. *denotes significant at 1%, ** significant at 5%

Table 2: Employment Status and Socioeconomic Factors as Predictors of Mental Health (GHQ-36 & "Poor Mental Health") for Lone & Partnered Mothers

Poor Mental Health

	Single Mothers				Partnered Mothers			
	1993-1998		2003-2008		1993-1998		2003-2008	
	LPM	FE	LPM	FE	LPM	FE	LPM	FE
Employed	-0.043	-0.060	-0.173***	-0.121***	-0.050***	-0.032	-0.040**	-0.052**
	(0.037)	(0.046)	(0.040)	(0.042)	(0.016)	(0.020)	(0.017)	(0.018)
Log of income	0.059*	0.044	-0.039	-0.000	-0.016	0.006	0.022*	0.030*
	(0.033)	(0.041)	(0.029)	(0.030)	(0.013)	(0.019)	(0.013)	(0.013)
Arrears	0.192**	0.097	0.313***	0.080	0.172***	0.081*	0.292***	0.061
	(0.082)	(0.088)	(0.078)	(0.072)	(0.049)	(0.048)	(0.064)	(0.054)
Degree	-0.027	-0.197	-0.014	0.201	-0.016	0.057	-0.006	0.088
	(0.068)	(0.209)	(0.052)	(0.216)	(0.025)	(0.128)	(0.021)	(0.069)
A level or equivalent	-0.011	-0.175	0.035	0.050	0.028	0.104	0.016	0.131
	(0.053)	(0.220)	(0.044)	(0.184)	(0.020)	(0.072)	(0.019)	(0.072)
5+ GCSEs	0.003	-0.147	0.100**	-0.058	-0.013	0.054	-0.002	0.195
	(0.042)	(0.221)	(0.048)	(0.134)	(0.019)	(0.098)	(0.023)	(0.184)
Physical illness	0.170***	0.139***	0.225***	0.098***	0.128***	0.058***	0.121***	0.069***
	(0.035)	(0.045)	(0.028)	(0.031)	(0.014)	(0.017)	(0.014)	(0.014)
Youngest child 2 or under	-0.131*	-0.190*	0.091	0.110	0.034	-0.001	-0.028	0.038
	(0.068)	(0.100)	(0.064)	(0.077)	(0.029)	(0.044)	(0.028)	(0.032)
Youngest child 3-4	0.017	-0.055	-0.018	0.055	-0.024	-0.034	-0.033*	0.014
	(0.052)	(0.065)	(0.051)	(0.048)	(0.019)	(0.023)	(0.019)	(0.017)
Youngest child 5-11	-0.086*	-0.098	-0.011	-0.012	0.010	-0.004	-0.017	0.009
	(0.046)	(0.063)	(0.037)	(0.042)	(0.022)	(0.029)	(0.021)	(0.021)
2 children	-0.044	-0.024	-0.036	-0.071	-0.022	-0.034	0.003	-0.006
	(0.039)	(0.060)	(0.039)	(0.052)	(0.016)	(0.022)	(0.016)	(0.016)
3 or more children	0.015	-0.123	-0.114*	-0.117	0.027	0.022	0.032	-0.011
	(0.059)	(0.114)	(0.059)	(0.083)	(0.024)	(0.039)	(0.023)	(0.031)
Never married	-0.043	0.004	-0.140***	0.063				
	(0.053)	(0.207)	(0.045)	(0.099)				
Cohabiting					0.076***	0.055	0.034	0.039
					(0.029)	(0.058)	(0.021)	(0.035)
N. individuals	1131	1318	2055	2154	6322	6614	9330	9507
N. groups		485		696		1793		2483

GHQ-36

	Single Mothers				Partnered Mothers			
	1993-1998		2003-2008		1993-1998		2003-2008	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Employed	-1.112**	-1.010	-2.639***	-1.961***	-0.662***	-0.508**	-0.648***	-0.781***
	(0.538)	(0.654)	(0.638)	(0.618)	(0.208)	(0.221)	(0.242)	(0.220)
Log of income	0.752	0.472	-0.524	-0.062	-0.443***	0.135	0.044	0.379***
	(0.473)	(0.516)	(0.449)	(0.466)	(0.171)	(0.208)	(0.206)	(0.141)
Arrears	3.045***	0.680	4.530***	2.265**	2.257***	0.836	4.267***	1.500**
	(1.085)	(1.323)	(1.210)	(0.890)	(0.536)	(0.570)	(0.874)	(0.633)
Degree	0.008	-2.274	-0.842	1.109	-0.304	0.160	-0.289	0.547
	(1.044)	(2.035)	(0.839)	(2.392)	(0.315)	(1.301)	(0.319)	(0.736)
A level or equivalent	-0.144	-0.881	0.211	0.426	0.169	0.895	0.061	1.104
	(0.830)	(2.096)	(0.713)	(2.399)	(0.277)	(0.876)	(0.289)	(0.723)
5+ GCSEs	1.047*	-2.651	1.227	-2.481	0.138	-0.772	0.020	4.409**
	(0.568)	(1.962)	(0.763)	(1.678)	(0.257)	(1.102)	(0.343)	(1.900)
Physical illness	2.535***	1.941***	3.427***	1.586***	1.841***	0.915***	1.779***	0.901***
	(0.475)	(0.535)	(0.458)	(0.410)	(0.181)	(0.189)	(0.203)	(0.165)
Youngest child <=2	-0.954	-1.328	0.326	1.552	0.134	-0.017	-0.685*	0.463
	(0.908)	(1.235)	(1.028)	(0.988)	(0.375)	(0.497)	(0.403)	(0.394)
Youngest child 3-4	0.902	-0.311	-0.548	0.864	-0.299	-0.168	-0.537**	0.308
	(0.651)	(0.784)	(0.719)	(0.602)	(0.252)	(0.250)	(0.262)	(0.214)
Youngest child 5-11	-1.055	-0.610	-0.255	-0.223	-0.023	-0.001	-0.302	-0.230
	(0.650)	(0.690)	(0.661)	(0.583)	(0.293)	(0.324)	(0.304)	(0.260)
2 children	-0.404	-0.743	-0.431	-0.337	-0.218	-0.481*	-0.025	-0.092
	(0.586)	(0.693)	(0.602)	(0.739)	(0.220)	(0.254)	(0.233)	(0.193)
3 or more children	0.600	-0.376	-1.620	-0.055	0.525*	0.240	0.397	-0.065
	(0.940)	(1.338)	(1.005)	(1.053)	(0.319)	(0.449)	(0.329)	(0.331)
Never married	-0.512	0.307	-1.912***	0.056				
	(0.695)	(2.523)	(0.724)	(1.197)				
Cohabiting					1.086***	0.382	0.421	0.117
					(0.355)	(0.669)	(0.301)	(0.374)
N. individuals	1131	1318	2055	2154	6322	6614	9330	9507
N. groups		485		696		1793		2483

Note:
Data is from the BHPS. Only lone mothers who have been single for one year or more are included in the models. Results are reported for linear probability (LPM), fixed effects (FE) and ordinary least squares models (OLS) Standard errors are reported in parentheses. Significance levels are denoted by * $p < .10$, ** $p < .05$, *** $p < .01$. In all models controls are also included for age (quadratic); region (11 standard regions) and individual year dummies. Standard errors are clustered on the individual in the cross-sectional models, and are robust in the panel estimates. Data is weighted using cross-sectional or panel weights, as appropriate. Results from the LPM model in panel a) are similar to the marginal effects estimated using a logit model. The logit model estimates the effects of employment on the risk of poor mental health for lone mothers in 1993-1998 and 2003-2008 respectively as -.060 (.038) and -.181*** (.043) and for mothers in couples -.051*** (.016) and -.030* (.017) (standard errors in parentheses).

Table 3: The effect of employment on mental health – transitory or permanent effects?

Linear Probability Models of "Poor Mental Health" with and without lagged dependent variables

	Single				Partnered			
	1993-98		2003-08		1993-98		2003-08	
	No lag	Lag	No lag	Lag	No lag	Lag	No lag	Lag
Model 1: Employment Dummy								
Lagged "poor mental health"		0.288***		0.311***		0.264***		0.264***
		(0.037)		(0.039)		(0.017)		(0.019)
Employed	-0.043	-0.043	-0.173***	-0.133***	-0.050***	-0.042***	-0.040**	-0.033**
	(0.037)	(0.031)	(0.040)	(0.033)	(0.016)	(0.013)	(0.017)	(0.014)
Log of income	0.059*	0.058**	-0.039	-0.039	-0.016	-0.008	0.022*	0.023**
	(0.033)	(0.029)	(0.029)	(0.025)	(0.013)	(0.011)	(0.013)	(0.011)
N	1131	1088	2055	1970	6322	6075	9330	8897
Model 2: Employment transition dummies								
Lagged "poor mental health"		0.288***		0.319***		0.265***		0.264***
		(0.037)		(0.038)		(0.017)		(0.019)
Employed t-1 & t	-0.038	-0.027	-0.158***	-0.097***	-0.038**	-0.026*	-0.034*	-0.027*
	(0.045)	(0.036)	(0.047)	(0.038)	(0.018)	(0.014)	(0.018)	(0.015)
Not employed t-1,	-0.052	-0.063	-0.197***	-0.223***	-0.074***	-0.069***	-0.045	-0.041
employed t	(0.047)	(0.043)	(0.061)	(0.057)	(0.023)	(0.022)	(0.028)	(0.028)
Employed t-1, not	0.047	0.041	0.095	0.144*	0.046*	0.050*	0.016	0.029
employed t	(0.071)	(0.068)	(0.079)	(0.073)	(0.028)	(0.027)	(0.030)	(0.029)
Log of income	0.074**	0.053*	-0.041	-0.052**	-0.021	-0.011	0.022*	0.022**
	(0.036)	(0.030)	(0.031)	(0.027)	(0.013)	(0.011)	(0.013)	(0.011)
N	1104	1088	2025	1970	6188	6075	9189	8897

(ii) OLS models for GHQ-36 with and without lagged dependent variables

	Single				Partnered			
	1993-98		2003-08		1993-98		2003-08	
	No lag	Lag	No lag	Lag	No lag	Lag	No lag	Lag
	Model 1: Employment Dummy							
Lag GHQ-36		0.384***		0.430***		0.391***		0.415***
		(0.035)		(0.036)		(0.020)		(0.019)
Employed	-1.112**	-0.698*	-2.639***	-1.771***	-0.662***	-0.439***	-0.648***	-0.362**
	(0.538)	(0.416)	(0.638)	(0.484)	(0.208)	(0.149)	(0.242)	(0.167)
Log of income	0.752	0.557	-0.524	-0.405	-0.443***	-0.154	0.044	0.144
	(0.473)	(0.353)	(0.449)	(0.337)	(0.171)	(0.124)	(0.206)	(0.148)
N	1131	1088	2055	1970	6322	6075	9330	8897
	Model 2: Employment transition dummies							
Lag GHQ-36		0.385***		0.438***		0.392***		0.416***
		(0.035)		(0.035)		(0.020)		(0.019)
Employed t-1 & t	-0.899	-0.406	-2.441***	-1.238**	-0.535**	-0.274*	-0.573**	-0.251
	(0.659)	(0.478)	(0.756)	(0.531)	(0.238)	(0.162)	(0.270)	(0.180)
Not employed t-1,	-1.070*	-1.060*	-3.597***	-3.617***	-1.333***	-1.139***	-1.408***	-1.251***
employed t	(0.625)	(0.562)	(1.009)	(1.060)	(0.302)	(0.274)	(0.391)	(0.350)
Employed t-1, not	1.012	0.782	0.544	1.450	0.046	0.210	-0.144	0.101
employed t	(0.963)	(0.895)	(1.446)	(1.155)	(0.358)	(0.345)	(0.398)	(0.365)
Log of income	0.852*	0.457	-0.584	-0.647*	-0.499***	-0.203*	0.032	0.114
	(0.503)	(0.363)	(0.482)	(0.367)	(0.172)	(0.123)	(0.208)	(0.149)
N	1104	1088	2025	1970	6188	6075	9189	8897

Note:
Data is from the BHPS. Only lone mothers who have been single for one year or more are included in the models. Standard errors are reported in parentheses. Significance levels are denoted by * $p < .10$, ** $p < .05$, *** $p < .01$. All models contain the same set of controls as table 2. Standard errors are clustered on the individual in the cross-sectional models, and are robust in the panel estimates. Data is weighted using cross-sectional or panel weights, as appropriate.

Table 4: Occupational Differences in the Effect of Work on Mental Health

	Single Mothers				Partnered Mothers			
	1993-98		2003-2008		1993-98		2003-2008	
	No lagged dependent variable	With Lagged dependent variable	No lagged dependent variable	With Lagged dependent variable	No lagged dependent variable	With Lagged dependent variable	No lagged dependent variable	With Lagged dependent variable
Poor Mental Health (Linear Probability Model)								
Managers	0.030	-0.014	-0.159***	-0.108**	-0.032	-0.030	-0.063**	-0.048**
	(0.095)	(0.075)	(0.061)	(0.053)	(0.038)	(0.033)	(0.026)	(0.022)
Professionals	0.003	0.013	-0.147**	-0.138**	-0.046	-0.040	-0.044	-0.041*
	(0.098)	(0.085)	(0.073)	(0.057)	(0.032)	(0.026)	(0.029)	(0.025)
Associated professionals	0.005	-0.014	-0.151**	-0.099	-0.009	-0.008	-0.042*	-0.031
	(0.087)	(0.080)	(0.076)	(0.061)	(0.030)	(0.025)	(0.026)	(0.022)
Administrative	-0.035	-0.010	-0.236***	-0.185***	-0.051**	-0.041**	-0.078***	-0.066***
	(0.065)	(0.057)	(0.054)	(0.048)	(0.021)	(0.018)	(0.024)	(0.020)
Skilled	-0.181	-0.155*	-0.215	-0.069	-0.096**	-0.078**	-0.065	-0.068
	(0.117)	(0.083)	(0.259)	(0.259)	(0.040)	(0.037)	(0.066)	(0.051)
Personal service	-0.031	-0.037	-0.158**	-0.127**	-0.073***	-0.063***	-0.050*	-0.038*
	(0.050)	(0.047)	(0.071)	(0.055)	(0.022)	(0.019)	(0.026)	(0.022)
Sales	0.023	-0.006	-0.195***	-0.142***	-0.035	-0.022	-0.030	-0.030
	(0.072)	(0.054)	(0.058)	(0.047)	(0.027)	(0.024)	(0.035)	(0.029)
Operatives	-0.130*	-0.082	0.119	0.085	0.046	0.037	-0.055	-0.042
	(0.072)	(0.070)	(0.170)	(0.114)	(0.057)	(0.046)	(0.057)	(0.046)
Elementary	-0.141**	-0.135***	-0.153	-0.084	-0.072**	-0.064***	0.002	0.009
	(0.064)	(0.050)	(0.095)	(0.080)	(0.028)	(0.023)	(0.037)	(0.032)
GHQ-36 (OLS Regression)								
Managers	-0.124	-0.632	-2.430**	-1.559*	-0.380	-0.375	-0.932**	-0.715**
	(1.125)	(0.900)	(0.975)	(0.836)	(0.466)	(0.413)	(0.368)	(0.325)
Professionals	-0.440	-0.408	-0.905	-0.624	-0.773*	-0.700**	-0.800*	-0.746*
	(1.334)	(1.183)	(1.095)	(0.947)	(0.399)	(0.338)	(0.429)	(0.382)
Associated professionals	-1.855*	-2.035**	-2.949***	-2.080**	-0.615	-0.628*	-0.836**	-0.685**
	(1.050)	(1.014)	(1.003)	(0.813)	(0.432)	(0.379)	(0.381)	(0.333)
Administrative	-0.977	-0.496	-3.326***	-2.414***	-0.895***	-0.763***	-1.031***	-0.827***
	(0.911)	(0.822)	(0.922)	(0.809)	(0.283)	(0.244)	(0.353)	(0.300)
Skilled	-2.212	-2.515**	-3.067	-0.601	-1.116**	-0.797	-1.871***	-1.611***
	(1.728)	(1.205)	(2.301)	(2.298)	(0.560)	(0.512)	(0.650)	(0.565)
Personal service	-1.176	-1.099	-2.792***	-2.237***	-1.243***	-1.119***	-1.044***	-0.844**
	(0.728)	(0.700)	(1.056)	(0.816)	(0.297)	(0.263)	(0.384)	(0.333)
Sales	-0.099	-0.447	-3.446***	-2.612***	-0.394	-0.242	-0.313	-0.316
	(0.961)	(0.767)	(0.912)	(0.756)	(0.338)	(0.302)	(0.484)	(0.431)
Operatives	-3.292***	-2.502***	2.302	1.722	0.935	0.820	-0.423	-0.247
	(0.805)	(0.742)	(3.120)	(2.171)	(0.694)	(0.564)	(0.793)	(0.678)
Elementary	-2.149**	-1.926**	-1.153	0.086	-0.532	-0.426	-0.399	-0.294
	(0.999)	(0.846)	(1.491)	(1.208)	(0.409)	(0.362)	(0.530)	(0.465)
	(0.478)	(0.430)	(0.439)	(0.359)	(0.175)	(0.152)	(0.204)	(0.182)
N	1131	1088	2055	1970	6322	6075	9330	8897

Notes: Data is from the BHPS. Only lone mothers who have been single for one year or more are included in the models. Standard errors are reported in parentheses. Significance levels are denoted by * $p < .10$, ** $p < .05$, *** $p < .01$. All models contain the same set of controls as table 2. Each of the models are estimated with and without a lagged dependent variable. Standard errors are clustered on the individual in the cross-sectional models, and are robust in the panel estimates. Data is weighted using cross-sectional or panel weights, as appropriate.